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EXAMINER	
PERILLA, JASON M	
ART UNIT	**PAPER NUMBER**
2611	

NOTIFICATION DATE	DELIVERY MODE
04/01/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/539,355	ALI, DANISH	
	Examiner	Art Unit	
	JASON M. PERILLA	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-18 are pending in the instant application.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on June 15, 2005 is in compliance with the provisions of 37 CFR § 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

4. Claims 3 and 12 are objected to because of the following informalities:

Regarding claim 3, “the mapping determination" is lacking antecedent basis.

Regarding claim 12, the claim is objected to for the same reason as applied to claim 3 above.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 18 is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 18, the claim is not enabled because the specification does not permit one having ordinary skill in the art the ability to make or use the invention as claimed. Specifically, the claim provides that a lookup table is generated according to the steps of claim 1. Claim 1, however, includes the final step of "effecting convolutional decoding of the bit stream associated with the assigned confidence values" although the specification does not describe that the claimed generation of the lookup table should include convolutional decoding. Rather, the specification provides that the lookup table is utilized as an input to convolutional decoding (see pg. 12, lines 3-18, and *19-20* of the specification). Therefore, one skilled in the art is not enabled to make or use the claimed invention of claim 12 because it presents an invention which is not described in the specification and not understood by one having ordinary skill in the art.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim 1-4, 6, 7, 9, 10-13, 15 and 16 are rejected under 35 U.S.C. § 102(e) as being anticipated by Reshef (U.S. Pat. No. 6529559).

Regarding claim 1, Reshef discloses a method of processing a data signal transmitted over a channel (fig. 2, ref. 42) comprising receiving a data sequence incorporating PSK symbols (fig. 4, col. 15, lines 35-45), separating the data sequence into bits of symbols ("Rx front end circuitry 52 which demodulates and *samples* the received signal to generate *received samples y(k)*"; col. 9, lines 20-25), assigning a confidence value to each bit in a symbol (fig. 3, ref. 84; col. 10, lines 60-61), and effecting convolutional decoding (fig. 2, ref. 64) of the bit stream associated with the assigned confidence values. Reshef discloses a data signal processor which demodulates (fig. 2, ref. 52) a received signal, equalizes it with a hard decision output (col. 9, lines 15-20 and 55-60), converts the hard decisions from the equalizer into corresponding confidence values or "reliabilities" (fig. 3, ref. 84; col. 10, lines 59-65), and passes the confidence values to a convolutional decoder (fig. 2, ref. 52; col. 3, lines 5-10).

Regarding claim 2, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses that the step of assigning a confidence value comprises, in part, mapping symbols to binary bits by means of a Gray code (col. 15, lines 35-53).

Regarding claim 3, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses incorporating data on the mapping determination in a look-up table for reference (col. 16, lines 25-53).

Regarding claim 4, Reshef discloses the limitations of claim 1 according to Reshef's embodiment of figures 2 and 3 as applied above. Reshef does not explicitly disclose, according to his figures 2 and 3 embodiment, re-coding hard decisions as an

(I,Q) pair and taking soft decisions therefrom. However, Reshef discloses, in a separate embodiment according to figure 9, re-coding hard decisions as an (I,Q) pair (fig. 9, refs. 156, 158, and 160) and taking soft decisions therefrom (fig. 9, ref. 162). Moreover, Reshef discloses that the method of the embodiment of figure 3 is incorporated in to the method of the embodiment of figure 9 (col. 19, lines 25-40; i.e. within block 162 of figure 9). Therefore, Reshef's embodiment of figure 9, which incorporates all the features of the figure 3 embodiment (i.e. the limitations of claim 1), discloses all the limitations of claim 4.

Regarding claim 6, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses an executable software (fig. 12) embodiment wherein a digital processor (fig. 12, ref. 202) is "operative to execute software adapted to perform the reduced information packet method" of his invention (col. 20, lines 25-50). Therefore, in such embodiment, Reshef's equalization (fig. 2, ref. 56) is performed by a digital processor.

Regarding claim 7, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses an executable software (fig. 12) embodiment wherein a digital processor (fig. 12, ref. 202) is "operative to execute software adapted to perform the reduced information packet method" of his invention (col. 20, lines 25-50). Therefore, in such embodiment, Reshef's equalization (fig. 2, ref. 56) is performed by a dedicated signal processing hardware (fig. 12, ref. 202) for equalization.

Regarding claim 9, Reshef discloses a computer program product directly loadable into the internal memory of a digital computer, comprising software code

portions for performing the steps of claim 1 (as applied above in claim 1) when said product is run a computer (col. 20, line 25 – col. 21, line 20).

Regarding claim 10, Reshef discloses the limitations of the claim as applied to claim 1 above.

Regarding claim 11, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 2 above.

Regarding claim 12, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 3 above.

Regarding claim 13, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 4 above.

Regarding claim 15, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 6 above.

Regarding claim 16, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 7 above.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 5 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Reshef in view of Ojard et al (U.S. Pat. No. 6826242; "Ojard").

Regarding claim 5, Reshef discloses the limitations of claim 1 as applied above. Reshef discloses the possible use of a decision feedback equalizer or "DFE" (col. 9, lines 55-60) but does not explicitly disclose using a DFE with whitening matched filtering. However, Ojard teaches the benefits of using a DFE with a whitening filter. Ojard teaches that using a whitening filter reduces noise power and partially or fully cancels interfering signals (col. 18, lines 34-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made that the DFE of Reshef could be modified to utilize a whitening filter as suggested by Ojard because it aides in reducing noise power and partially or fully cancelling interfering signals.

Regarding claim 14, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef in view of Ojard disclose the remaining limitations of the claim as applied 5 above.

11. Claims 8 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Reshef.

Regarding claim 8, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses de-interleaving (fig. 2, ref. 62; col. 10, lines 20-25), and incremental redundancy steps (col. 3, lines 2-5) before convolutional decoding (fig. 2,

ref. 64). Reshef discloses that the encoder (fig. 2, ref. 34) adds “redundancy” bits to the transmitted data (col. 8, lines 40-46). Hence, the decoder, must act upon the redundancy in “incremental redundancy steps” to remove the redundancy (col. 3, lines 2-5). Moreover, in conjunction with Reshef's simulated embodiment of figure 9 (which inherits the features of the embodiment of figures 2 and 3), it is disclosed that 8-PSK bursts are modulated utilizing "punctured rate 1/3 convolutional coding" (col. 19, lines 56-63). Reshef does not explicitly disclose de-puncturing the encoded data among decoding of a transmitted signal (i.e. fig. 9, ref. 162). However, for the utility of the receipt of punctured encoded data, one skilled in the art would find it obvious to de-puncture the received data before decoding it. Therefore, because puncturing is utilized in the coding of Reshef’s signals transmitted, it is obvious to one having ordinary skill in the art at the time which the invention was made that Reshef’s decoder should utilize de-puncturing as a compliment to the puncturing encoding to maintain the integrity of the data transmitted.

Regarding claim 17, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 8 above.

Conclusion

12. The prior art of record not relied upon above but cited on the accompanying PTO-892 form is presented by the Examiner to further show the state in the art with respect to carrier frequency recovery.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON M. PERILLA whose telephone number is (571)272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason M Perilla/
Primary Examiner, Art Unit 2611
March 25, 2008

/jmp/